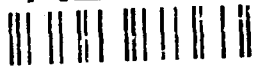


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**LOGISTICS COMMAND AND CONTROL (C2) AND ITS APPLICATION
DURING DESERT SHIELD/STORM**

BY

**Lieutenant Colonel William H. Taylor
United States Army**

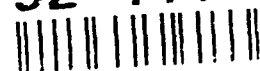
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LOGISTICS COMMAND AND CONTROL (C²) AND ITS APPLICATION
DURING DESERT SHIELD/STORM

AN INDIVIDUAL STUDY PROJECT

by

Lieutenant Colonel William H. Taylor
United States Army

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Project Adviser

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ABSTRACT

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With the integration of warfighting concepts from AirLand Battle, Future to AirLand Operations and their requirements for nonlinear battles with enduring sustainment imperatives - anticipation, continuity, integration, responsiveness and improvisation, the future of our Army to project power on major regional contingencies depends even more on logistics as a combat multiplier. General Norman Schwarzkopf made this clear when, in the early stages of Desert Shield, he said "Once again the logistics tail wags the fighting dog." Our logistics decisions today will affect combat capabilities tomorrow. Our emerging combat service support (CSS) doctrine, calling for a multifunctional Command and Control (C²) headquarters at the battalion and group level set the stage to correct earlier doctrine that seemed to lag behind our Warfighting Doctrine. Reviewing logistics lessons during Operations Desert Shield/Storm, the outcome of the war bears out the fact that logistics never constrained a tactical or strategic commanders' decision. While true, such a statement may lead to the incorrect conclusion that our logistics support concept is adequate for the Army of the 21st Century. In fact, our ability to support the operation more accurately reflected the limited duration of the ground war than our logistics robustness. The corps support group concept of logistics C² can support forces involved in regional contingencies, by creating sufficient flexibility to adapt to requirements that our country's military strategy demands. However, now that we are in a world of high technology, limited resources and face a downsizing force structure, we must continue to refine logistics C² and a new methodology for deploying of CSS assets, that incorporate changes in technology and lessons from Desert Shield/Storm.

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INTRODUCTION

The former Army Chief of Staff, General Carl Vuono speaking to Army logisticians through an article in their journal said it best: "Today, the United States Army stands at the apex of achievement and fresh from victory in its most complex campaign in more than two decades. Logisticians should take special pride in Desert Storm, for logistics was fundamental in all phases of the operation."¹

Unfortunately, even as General Vuono wrote, changes were making the chances of repeating such a success less likely, if done the same way. New military strategy must continue to aggressively shape the Army for the 21st Century, requiring an overarching vision of a trained and ready force that can fulfill its strategic mandate on a regional basis, under crisis conditions. To realize this vision, with a downsized Army, we must be imaginative and determined to come up with a force that is versatile in its ability to respond by tailored force packages to a wide range of requirements in multiple theaters of operations. Logisticians must become adept in supporting contingencies around the world in a theater with limited logistics infrastructure. Likewise, our Army must be deployable on short notice and provide power projection of combat forces regionally. These characteristics for our Army, along with support to an Army that is highly lethal, hinges totally on Army logisticians' ability to arm, fix, fuel and move combat power. Consequently, logisticians must fully understand AirLand Battle

(ALB) doctrine, understand the commander's intent, and fully anticipate support requirements to fight the war.

This paper addresses combat service support (CSS) doctrine on logistics (C²) structure, then reviews this concept through lessons from Desert Storm, and finally discusses any doctrinal changes required for the Army 2000 and beyond. Operation Desert Shield/Storm (ODS) showed all the world to see the results of nearly two decades of hard work in shaping a force that was second to none. More important, ODS showed what logisticians can do to support ALB and emphasized a seamless approach to combat service support does work on a nonlinear battlefield.

BACKGROUND

For almost 200 years, students of the art of war have recognized the importance of integrating logistics and combat operations. CSS Doctrine restates this same premise:

"Operations on the modern battlefield are fast paced and resource hungry. Logistics unit commanders face decisions that previously only combat commanders. Corps Support Groups (CSG) may form part of a forward-deployed force based abroad to support alliance commitments of regional stability. Others are based in CONUS prepared to deploy on short notice for contingency operations in support of joint or combined operations."²

CSS Commanders must be able to anticipate changes in support requirements as a tactical plan shifts. They must then understand the tenets found in FM 100-5, Operations and be able to apply those tenets in support of forces operating on a nonlinear battlefield. ALB dictates a highly lethal and mobile force. This concept has caused doctrine to make significant changes in the force structure and the way future battles will be fought. Logistics, although historically a combat multiplier, has even more potential to decide on the outcome of future battles.

In order to meet these doctrinal challenges, CSS doctrinal writers, realized the need to review how CSS units could meet the ALB imperatives and initiated a study at the U.S. Army Combined Arms Support Command (CASCOM) to better focus CSS support for an Army Corps. The outcome of the Command and Control (C²) Study was referred to as the Corps Support Group (CSG) Concept. Better

support for corps non-divisional units operating in the divisional area was fundamental to this concept along with providing backup support to the division as required.

Key to the CASCOT's initiative in inculcating combat sustainment imperatives imposed by ALB were the following principles:³

- Single supporter for combat support battalions
- Creation of distribution systems
- Support forward on an area basis
- Simplified C² structure

Adherence to these imperatives and the concept of deep attacks, which extended the corps boundary to an area occupying 100 by 210 kilometers or 21,000 square kilometers dictated a single supporter positioned in the division rear boundary. Support lines of supply were stretched further and to counter this, synchronization was required by logisticians to ensure transportation and supplies were integrated into responsive distribution systems. This concept of a single supporter for combat and combat support units from a corps support battalion operating as a multifunctional battalion was key to the habitual relationships and ongoing responsiveness envisioned in this CASCOT Study.

Moreover, the United States has continued to be committed to a smaller force with contingency-type missions worldwide and without the threat from another superpower. Thus, the most economical and effective means to overcome this challenge is by

maintaining a highly trained, lethal and mobile force that is ready to deploy on short notice.

Lieutenant General (Retired) Joseph M. Heiser, Jr., in his book, A Soldier Supporting Soldiers spoke of an economy of force and its application in combat logistics in Vietnam, but his remarks are applicable to today's forces. He states,

"The war in Vietnam is being sustained today by the most responsive support base in U.S. history. The objective before us is also to make it the most effective, efficient logistical operation in any combat zone. The economic and prudent management of resources in the combat area, while at the same time unstintingly meeting the soldier's battlefield requirements, may at first appear incongruous. But looking further, it becomes clear that the application of sound supply, maintenance, and transportation techniques and systems molds together the notion of responsiveness to combat requirements and efficient management of assets during war. Successful mission accomplishment depends upon the complete compatibility and integration of these techniques and systems."⁴

Finally, the CASCOM Study concluded tenets of the ALB provided the doctrinal framework for the Army today and in the future. Also it asserted the need for our forces to be flexible enough to respond to the quickly changing situations on the battlefield.

Again, the Army's XVIII Airborne Corps was the innovator of this concept back in 1987. What has now been called upon to support rapid deploying forces with combat service support has now been adopted worldwide as a solution in meeting the ALB tenets found in FM 100-5. Further discussion of this doctrine and its application to Desert Storm support follow in the subsequent chapters.

OLD VERSUS CURRENT CSS DOCTRINE

Prior to the CASCOS Study on Logistics C², the governing regulation providing the basis for modern CSS Doctrine was FM 100-10, Combat Service Support. CSS doctrine prior to 1989 focused on support to heavy divisions. Doctrine writers then dictated functional alignment i.e. pure supply or maintenance at the battalion and group levels within non-divisional units. Support for the warfighters was found in the corps rear area. This CSS doctrine was based on the concept that the fighting would always be forward and the corps rear was a safe haven for CSS units. Contingency operations mandated an ad hoc task organization of multifunctional units into logistics support activities (LSA). Figure 1 and 2 indicate the support laydown for corps non-divisional units. This concept, of locating CSS further to the corps rear, did not meet the responsiveness and other issues dictated by ALB doctrine.

To address the operational commanders intent and provide rapid support for non-divisional units and back-up support to divisional units on a nonlinear battlefield, doctrine was revised into the current corps support group concept. Current doctrine positions commanders forward, thus, shortening the distances that must be covered to coordinate and deliver logistics support in the division sector. Arraying CSS support to non-divisional and divisional soldiers this way facilitates agility; it allows the warfighters to seize the initiative and go on the offense when

the opportunity presents itself. Additionally, moving transportation assets forward under the control of a corps support battalion (CSB), or sometimes referred as a logistics task force (LTF) contributes to the fluidity of battle and keeps soldiers fed, fixed and armed, whatever the battle tempo.

The CSGs are a single source for logistics support if task organized properly with the right mix of CSS units and have the assigned mission responsibility to provide C² and supervision for three to seven corps support battalions.⁵ The basic missions vary depending on whether the CSG deploys in the forward or rear portion of the corps sector. Doctrine calls for one forward CSG to be aligned to each division. This CSG has multifunctional capabilities i.e. supply, maintenance, transportation. A rear group has the functional responsibility to support, on an area basis, units employed in or passing through its area. Further discussion on both the forward and rear support groups require more thoughts.

Forward CSGs support covers the area assigned to a division, separate brigade or armored cavalry regiment sector of the battlefield. The CSGs missions are to support non-divisional forces operating well forward in the division's sector and provide backup support to divisional units. The LTF commander is the single point of contact for units operating in his area of responsibility and usually provides CSS assets to fuel, feed, fix and move warfighters in sector.

The rear CSG provides area support to units and reinforces

support to the forward CSGs. The rear CSG's units maintain the bulk of the corps' general support (GS) supply base and use corps transportation assets to push supplies forward to divisional and non-divisional forces. The rear CSGs function as functional battalions and include hospitals and replacement units. Figures 3 and 4 depict the doctrinal laydown of the forward and rear CSGs.

There is no standard CSG organizational structure; rather, the COSCOM commander tailors the CSGs to meet the needs of supported forces and within the factors of Mission, Enemy, Troops, Terrain and Time (METT-T) available. Figure 5 depicts a sample organization for a forward and a rear CSG.

In order to support deep operations by a corps, CSGs help resupply corps artillery and aviation units. The CSG commander may attach maintenance support teams (MST) to the ground maneuver battalion to repair critical weapon systems on-site. Further, he could position a direct supply company or ammunition transfer point (ATP) even farther forward to shorten the lines of communications (LOC).

The big challenge that CSGs must face is support to a contingency operation. Normally such operations are short in duration, have limited objectives, and require speed and flexibility to support forces on the ground. Requirements and missions for CSG elements depend upon the nature of the contingency area, expected duration, and available host nation support (HNS) or contracted support. CSS elements for

contingency missions normally deploy as soon as an assault force lands. If possible, CSS elements set up in a secure area or near the engaged area.

DESERT SHIELD/STORM APPLICATION

In the 1st Corps Support Command (COSCOM) After Action Review dated 15 October 1991, the COSCOM Commander wrote "The Corps Support Group/Corps Support Battalion (Log C2) Concept worked exceptionally well in its first test in support of full combat operations during Desert Shield/Storm. Resources and responsibility were at the execution level where commanders were able to tailor support to the immediate needs of combat commanders."⁶

The building of logistics task forces and support groups was done throughout the XVIII and VII Corps logistical plan. More importantly, the battlefield laydown and support relationships worked well in support of the ground combat commanders.

The 1st COSCOM from Fort Bragg began operations on 5 August 1990 and ended its involvement on 15 June 1991. The experiences of the 1st COSCOM during this period covered every facet of force structure and CSS operations. Early objectives for the XVIII Airborne Corps were to deploy a CSS structure to support four and two-thirds divisions in a defensive posture and, ultimately to make a transition to conduct offensive operations.

1st COSCOM executed Operation Desert Shield without a developed time phase force deployment data (TPFDD). However, the corps did use an existing operations plan as a starting point to

develop a structure to support units designated to deploy into theater. At the same time that corps units were being identified, echelons above corps (EAC) were being chosen for deployment. The identity of which units belonged respectively to corps or EAC added to the confusion. Guidance from U.S. Central Command (CENTCOM) was to create a CSS force supporting the XVIII Airborne Corps and the supplemental EAC.

1st COSCOM created a task organization with the assumption the 1st COSCOM would control logistics bases in theater, less port activities, until the theater developed to accept the EAC role. The COSCOM commander set out to build and task-organize CSS units in theater while developing a concept of support for Desert Shield. His approach was logical and functional using the corps support group concept as described in FM 54-30, Corps Support Groups. The 1st COSCOM initially was composed of four CSGs and a medical group.

The 1st COSCOM Commander continued to emphasize multifunctional concepts. COSCOM planners took precautions to ensure that CSGs task organizations were augmented with essential units to perform all specified missions. Designated Reserve Component, National Guard and other units were assigned to provide a full spectrum of multifunctional capabilities. The task organization was tailored for certain contingencies and reshaped once units were positioned in country. As capabilities and shortfalls emerged in a CSG, that command was given a unit to provide that capability. Task organizations continued to be

revised until the corps matured within 120 days from deployment. During this period the COSCOM grew in strength from 6,000 personnel at Fort Bragg to 24,000 plus personnel for Desert Shield.

The forward CSGs were challenged throughout the operations to task-organize themselves to sustain living in Tactical Assemble Areas (TAA) for an indefinite period of time while preparing to support combat maneuver operations once the ground war began. Because few main supply routes (MSR) existed and cross country mobility was difficult, CSGs were organized into logistic task forces (LTFs) ready to support fast moving mid to high intensity offensive operations.

The 507th CSG (rear) was task-organized for offensive operation with six transportation companies and two trailer transfer detachments. These units were under the 7th Transportation Battalion to provide centralized control of critical common user land transportation (CULT) assets. These CULT assets provided through-put assets for the entire XVIII Corps.

The 44th Medical Brigade initially developed medical task forces and placed tailored mobile army surgical hospitals (MASHs) and combat support hospitals (CSHs) under one C² medical group to ensure maximum focus of hospitalization support. This latitude to task organize internally as the commanders saw fit and using detailed planning and rehearsals aided the commanders in organizing their units for offensive operations. Generally, task

forces were built around the surgical capability of the four surgical tables of the MASH and CSH. Task forces were designed to have surgical capability available within four hours of arrival at an objective and full capacity within 12 to 18 hours of arrival. The other vital part of the design of the task forces was their ability to traverse difficult terrain and keep up with the forces in an offensive operation that extended the LOCs.

As the theater matured, the Brigade received an additional medical group, the 62nd. As the ground tactical plan developed, the combat configuration lent itself to organizing the Brigade into forward and rear task forces (TF), each controlled by a medical group. The 1st Medical Group was placed forward in the corps with C² responsibility for hospitals (MASH/CSHs), evacuation forward and provisions for ancillary services. The corps rear was controlled by the 62nd Medical Group, responsible for C² of evacuation hospitals. It kept its focus on keeping hospitals forward clear of patients and moving rear patients to staging areas for further evacuation to the theater assets.

1st COSCOM's final task organization in support of XVIII Corps included five CSGs and one rear CSG. Forward CSG's provided area support to non-divisional corps units and backup direct and general support to divisional units. The rear group remained functional in nature, and provided transportation, aviation maintenance and ammunition support to the entire XVIII Corps.

On the evening of 8 November 1991, VII Corps units were notified of their deployment to support operations in Southwest Asia. The 2d COSCOM began to pull together CSS units to support a corps with five divisions, one armored calvary regiment, as well as non-divisional brigades and battalion combat forces.

In order to support the main attack, 2d COSCOM and 7th Corps Support Group (Forward) tailored four corps support battalions across the corps into multifunctional logistics tasks forces (LTFs) in support of the 1st and 3rd Armored Division, the 2nd Armored Cavalry Regiment and nondivisional soldiers. Each LTF was designed to support maneuver units during the penetration, defeat of Iraqi tactical reserves and final destruction of the Iraqi Republican Guard Forces. CSS capabilities consisted of supply and services, including subsistence, fuel and water; maintenance and transportation. The 16th Corps Group Rear was given the mission to provide direct support (DS) to the four CSGs forward out of logistical bases located in Saudi Arabia. Figures 6 and 7 depict the logistical laydown for fuel and ammunition employed while operating in Iraq. This concept of support centered on building corps logistic packages (LogPacks) at the general supply (GS) base echo. These LogPacks consisted of fuel, ammunition, water, subsistence and other supply classes and were configured for units to be supported. Supplies and equipment then were moved by truck to a trailer transfer point (TTP) located in Iraq and subsequently pushed to logistics release points (LRPs) near the supported units. The first Corps LogPack

travelled with the supported units in their combat formation and proved invaluable to rapid rearm/refuel operations. The TTP was the point where the Rear CSG the 16th, exchanged full trailers and fuel tankers from Log Base Echo with empty trailers from units operating in Iraq. As combat operations moved forward, the TTP operations moved to Log Base Nelligen.

Elements of the LTFs crossing the Iraqi/Saudi border carried personnel and equipment that could immediately affect logistics making it a combat multipliers. These included maintenance support teams (MSTs), maintenance collection points (MCP), fuel and ammunition, food and water, water production teams, fuel teams, and critical repair parts. This tailored-force concept enabled the CSG to provide a full range of logistical support to all units within an area.

Elements from other forward support groups, the 159th CSG and 43rd CSG supported the 1st Calvary Division and 1st Infantry Division using the tailored multifunctional task forces. Again, this concept allowed CSS units to keep up with combat forces and gave our combat power the ability to strike hard and continuously, and to finish the fight rapidly.

The 2d COSCOM Commander after the war, attributed the logistical successes of ODS to "forward positioning of support tied to supported units; synchronized logistics C² with maneuver to sustain high tempo operations; rapid logistics build up ..."⁷

CSS LESSONS

Operation Desert Shield and Desert Storm were stunning successes for the coalition forces and our trained and ready Army. While brute force logistics enabled the coalition forces to soundly defeat the fourth largest Army in the world, the speed and precision with which coalition forces achieved victory should not deter us from continuing to institute changes in CSS doctrine. While many issues arise that indicate need for changes in CSS equipment, doctrine and manning the force, the following are noted shortfalls that exist at the COSCOM level. Other CSS challenges faced by our Army 2000 will be addressed briefly with emphasis on doctrinal issues, leader development, training, modernization and near-term challenges to fix Desert Shield/Storm shortcomings.

The use and employment of multifunctional LTFs in CSGs in both corps was key to making warfighters effective on a non-linear battlefield. Inadequate numbers of CSS units dictated by downsizing our Army indicate fewer and fewer command and control headquarters. Those that remain must have the capability to direct and control the total spectrum of logistics operations.

Mobile equipment in CSS units is essential to future successes. CSGs must be capable to move at the same speed and over the same terrain as the supported major subordinate commands (MSCs). Specifically, the heavy expanded mobility tactical truck (HEMTT) tanker must replace the 5000 gallon fuel tankers. HEMTT

wreckers must replace the old series M816 wreckers, high mobility multipurpose wheel vehicles (HMMWVs) must be authorized for C² vehicles. Obsolete 2-1/2 ton and 5 ton trucks must be replaced with palletized loading systems (PLS). Materiel handling equipment (MHE) requirements would be reduced using the PLS. Fielding the Small Emplacement Excavator (SEE), with its cross-terrain movement capability and engineer attachments, would also enhance mobility while allowing rapid defensive position emplacements by using the backhoe attachments. Likewise, if HEMTT Tankers are not added to the force structure, HEMTT Tractors are an alternative solution for pulling heavy trailers and fuel tankers.

Recovery assets and our ability to transport tanks were not up to the challenges found in Desert Storm. Our recovery vehicle M88 and heavy equipment transports (HET) can no longer do the job due to the weight increases in the main battle tank. HET operations were constantly delayed due to blown tires, cracked frames, and burned out brake lines. All these problems were associated with overloading conditions caused by hauling MIAI tanks. We must design and procure a new tank recovery vehicle and HET system in sufficient numbers to allow a corps commander to move a brigade's worth of tanks in one lift and the division commander, a battalion worth.

Given the dispersion of CSS units and the continuous operations of many independent missions, improved Command, Control and Communications (C³) is vital to the CSG concept. As

a minimum, tactical operational centers -- expando vans or M934 vehicles must be authorized. Tactical satellite (TACSAT) communications, in sufficient amounts and with data links for computer interface, provide critical backup to current communication systems and are essential to effective logistical operations. All tactical communication, including mobile subscriber equipment (MSE) could not provide required communication nodes. One of the most effective communications devices used during Desert Storm was the Marine Satellite Telephone Terminal. It was relatively compact, easily installed, rugged enough to withstand the cross-terrain movement and reliable. While it was a commercial off-the-shelf product, the Army might consider its procurement as an interim solution.

Navigational devices i.e. LORAN, GPS were critical in locating and linking up logistical resupply convoys at designated logistic release points. Such devices must be incorporated into unit table of organization and equipment (TO&E). Additionally, small hand held VHF/UHF Motorola radios were invaluable to both perimeter security and staging and marshalling area (STAMA) operations. These hand held radios added to the C² while staging heavy equipment and supplies in logistic bases. Likewise, resupply and convoy operations over a vast corps sector dictates C² assets sufficient to control logistical operations down to the platoon level.

Logistical planning data generated from ODS should be captured and produce new planning data. Prior to ODS our

logistical concept in calculating days of supply (DOS) specifically for petroleum and ammunition was alien to combat soldiers. CSS planners must be able to develop and lay down logistical capabilities in terms understandable to the Warfighters. In terms of fuel, logisticians must develop a unit-kilometer standard that translates gallons of fuel on hand into usable data. A consumable fuel matrix that shows, by type vehicle, the total distance a battalion/brigade combat force could move would give the combat planner information needed to support a combat operation. Similarly, an ammunition matrix developing rounds per weapon system would help to eliminate confusion in logistical plans for ammunition.

CSS units are predominantly the initial forces introduced into a theater of operation. Thus, any contingency force must retain a robust CSS structure sufficient to support combat operations in an austere theater. This means that CSGs must be equipped and manned at an appropriate authorized level of organization (ALO) for simultaneous contingency operations of at least two heavy corps. CSS units must be configured in the active forces so as to initiate emergency deployments without having to receive any equipment or personnel. Follow-on CSS to the theater must come from Reserve Component/National Guard units. Similarly, critical Active Component shortfalls including graves registration, laundry and bath, transportation, maintenance units, and water and fuel production and distribution must be added to CSGs to support two corps operations.

CONCLUSIONS

CSS doctrine with designed forward and rear CSGs has proven its worth and now must be the building block used to further refine logistics C². Lessons received from ODS confirm Log C² demonstrated its flexibility to anticipate requirements of the maneuvering forces and was able to meet any contingency requirements our forces face in the 21st Century. With AirLand Operations' focus on a lean, agile corps, CSS units must be integrated into a force very much dependent on robust training and technological advancements to sustain the ground campaign. Mobility and material handling capability can greatly be improved through the fielding of PLS which contains a highly mobile truck with flat racks. Navigational systems such as the GPS system used in Desert Storm must be a part of every unit. Better communication assets i.e. TACSAT must be included down to CSS units operating as forward or rear support battalions. Finally, ALB which depends heavily upon synchronization would improve drastically with the aid of Satellite Based Monitoring Systems which could be used to track real-time movement of units and supplies.

The Army Training and Doctrine Command's CASCOT, along with the Ordnance school continue to look at ways to improve the way we sustain the force. The systems called battlefield maintenance system (BMS) must be able to rapidly diagnose faculty equipment and fix it as far forward as possible to keep the maneuver forces

in the fight. The reoriented battlefield maintenance concept is then dependent on movement and supply management to transport and replenish critical repair parts using a battlefield distribution system (BDS) that can pinpoint units and supplies needed on a nonlinear battlefield. This may entail prepositioning supplies forward into logistic release points or "cache" which relies on technological advances discussed earlier, i.e. PLS System, GPS, Satellite Monitoring Systems.

The Academy of Health Sciences, Fort Sam Houston, Texas, recognized the importance of the imperative "anticipation" had in sustaining forces during ODS. As a result of the war and lessons concerning medical care and tailoring medical forces, medical command used the Corps Support Group Concept to pattern their Log C² into a forward and rear medical battalion. Their new doctrine found in FM 8-10, Health Services Support in a Theater of Operations, now is able to meet the demands of ABL operations. Now the entire Log C² is integrated and standard across the full spectrum of CSS support to a contingency force.

General H. Norman Schwarzkopf, former CINC Central Command, said it best in describing the importance logistics played on the outcome of Desert Shield/Storm when he said, "The task faced by the logisticians can only be described as daunting and their success can only be described as spectacular;"⁸ or in shorter terms General Frederick M. Franks, TRADOC Commander and former VII Corps Commander, stated "forget logistics and you'll lose!"⁹

RECOMMENDATIONS

As we look at evolving ALB doctrine for an Army 2000 and beyond, CSS challenges can be grouped into the following categories:

DOCTRINE:

- Logistics C² concept with forward and rear support groups continue to be implemented for both Active and Reserve CSS units, beginning in FY92 with completion targeted by FY95.
- Logistical system must be one, consistent across the Army or "seamless" support operating on a nonlinear battlefield.
- Ensure all CSS doctrine calls for the development, testing, and exercising of standard, fully-integrated automated systems to support all components of the total Army in the same way in both peace and war.
- Develop doctrine to exercise CSS automation architecture and communications procedures as fully as combat procedures.

LEADER DEVELOPMENT AND TRAINING:

- CSS leader development must now focus on multifunctional training with the outcome of future leaders being both tactical and technically competent and able to translate

the commander's intent into a viable logistics plan that supports the fight.

- CSS training must focus on developing a strong Reserve Component orientation to the CSS force structure and at the same time increasing the emphasis logistics has in support of combat forces at the National Training Center (NTC).
- CSS units must be heavily stressed during major exercises whether at the NTC or under computer simulations to prepare them for contingency operations.

MODERNIZATION:

- Continue to modernize CSS units with the latest technological advancements in satellite-based monitoring, communication, and navigational systems.
- Continue to field the PLS systems and other equipment to support CSS distribution system.
- Ensure units are fully mobile and able to communicate and control CSS units in order to unweight maneuver units from having to drag a logistical tail across a battlefield that has depth.

PAST DOCTRINE

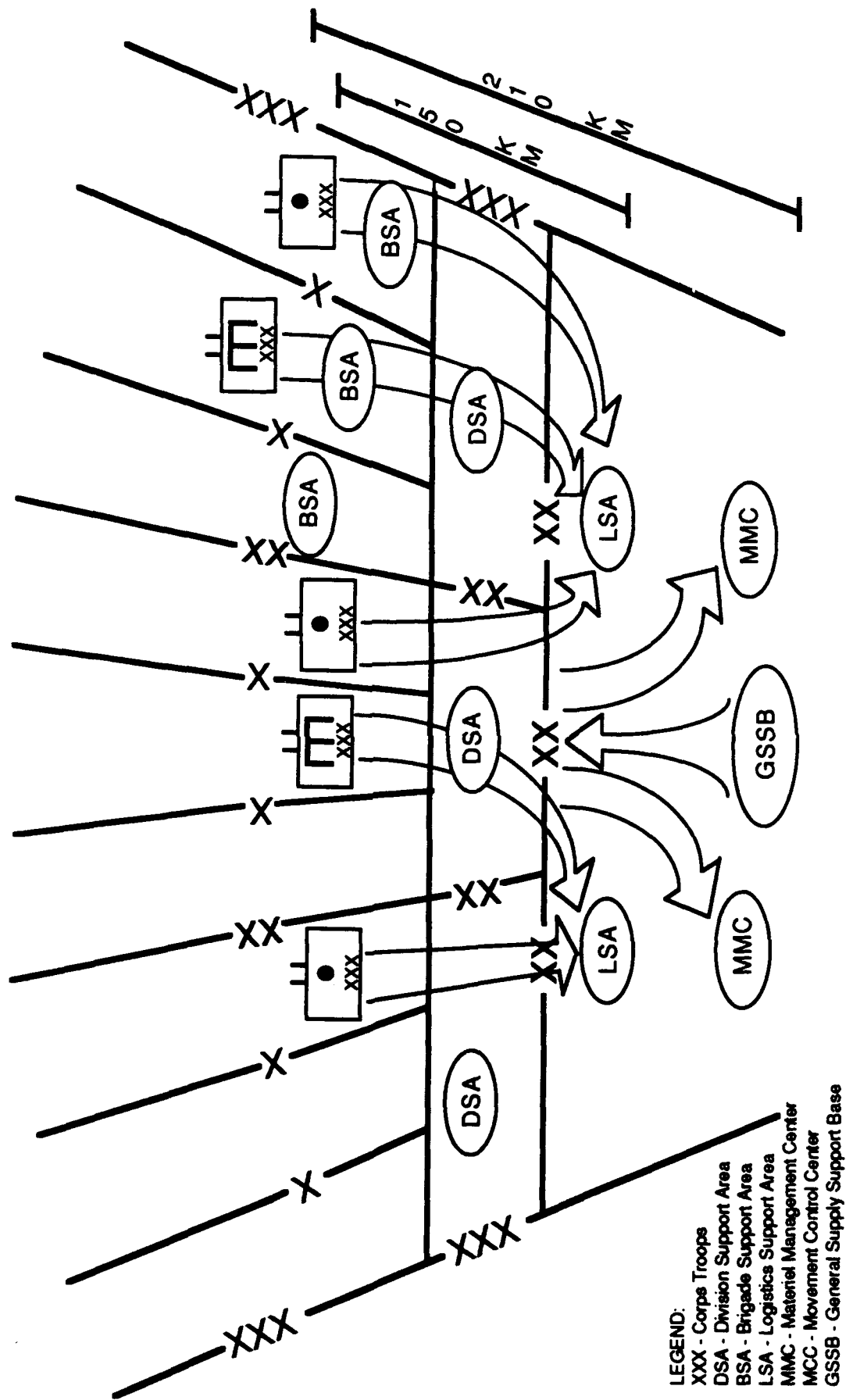


Figure 1.

CORPS TROOPS DOCTRINAL SUPPORT

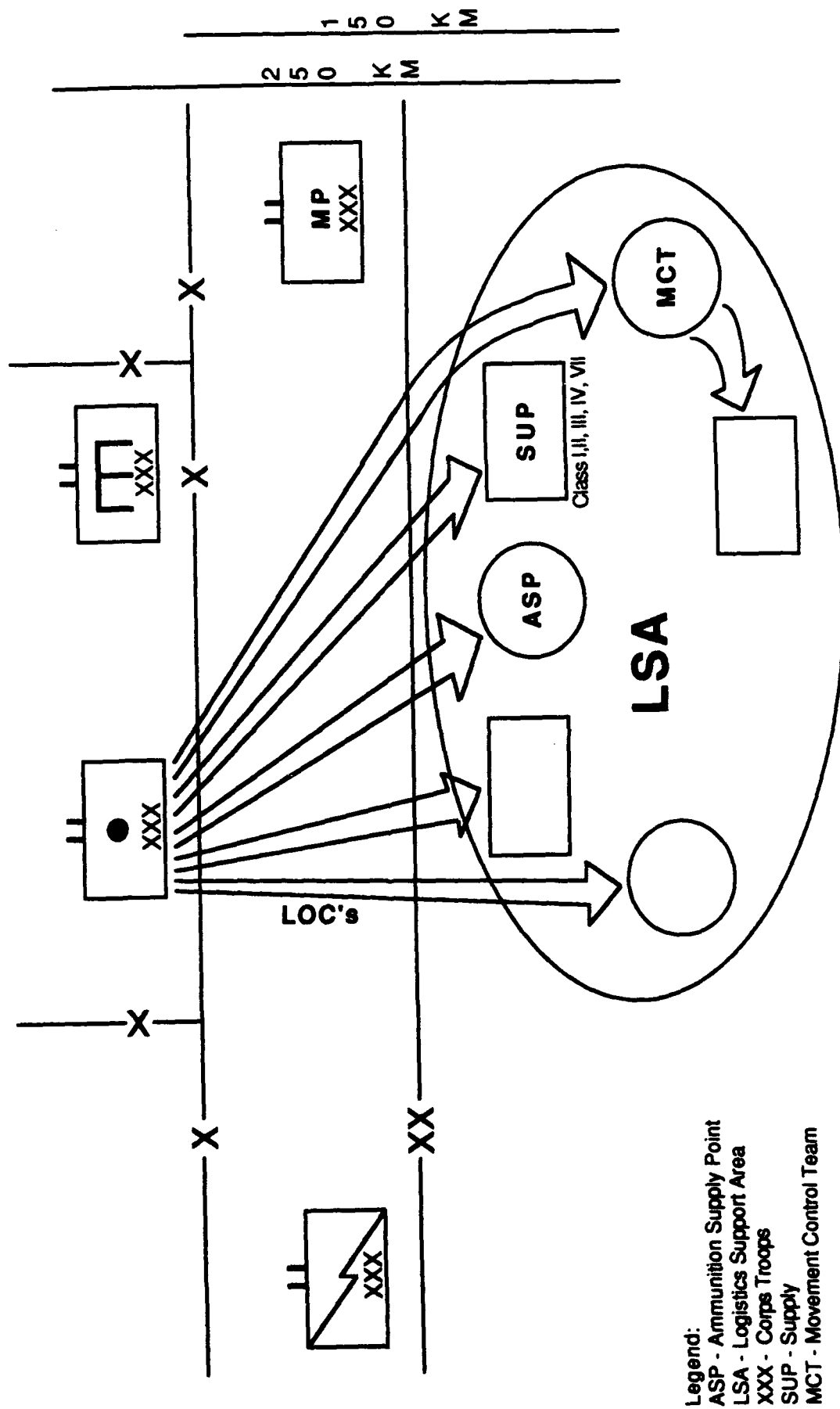


Figure 2.

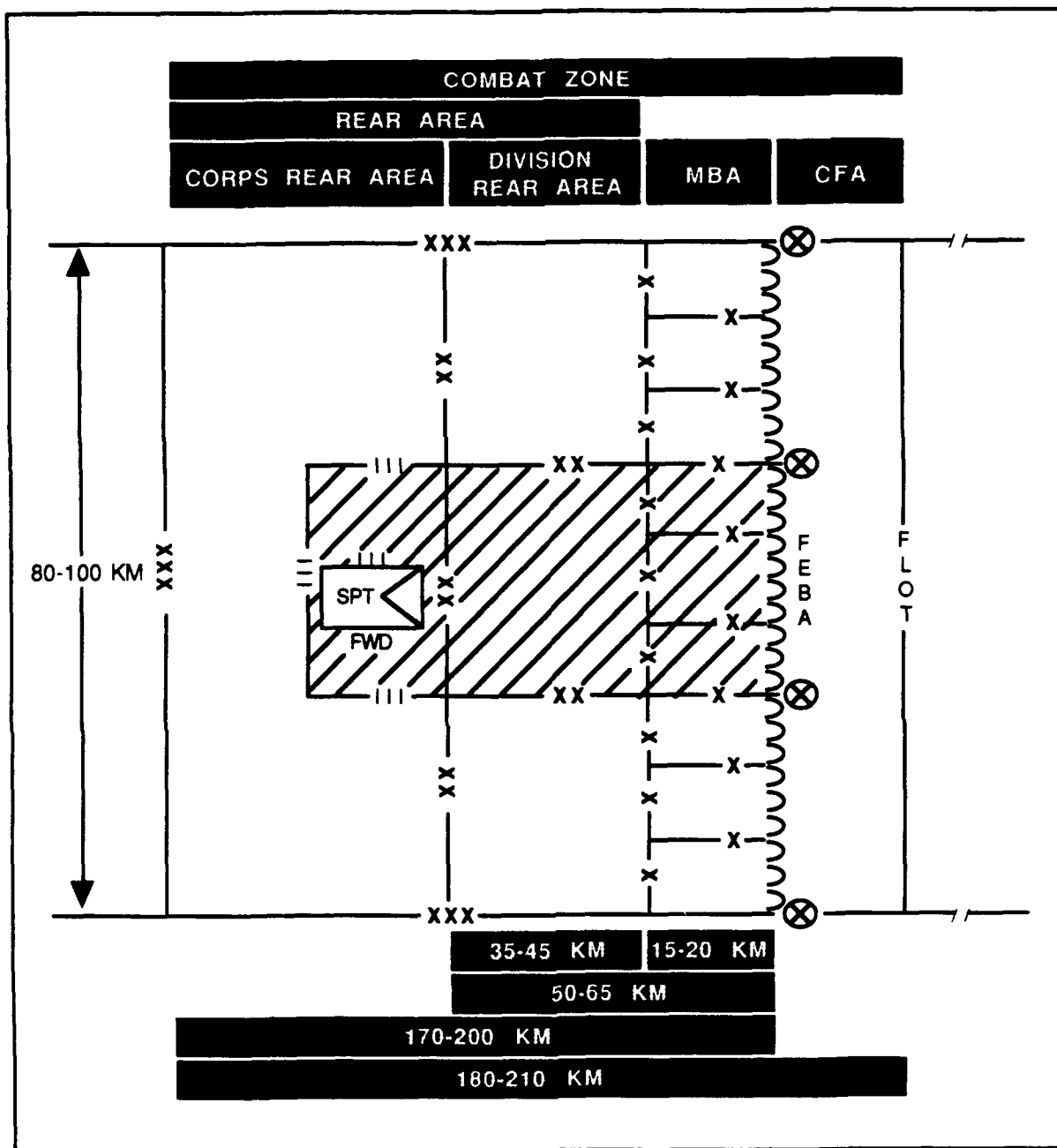


Figure 4. Forward CSG's area of responsibility.

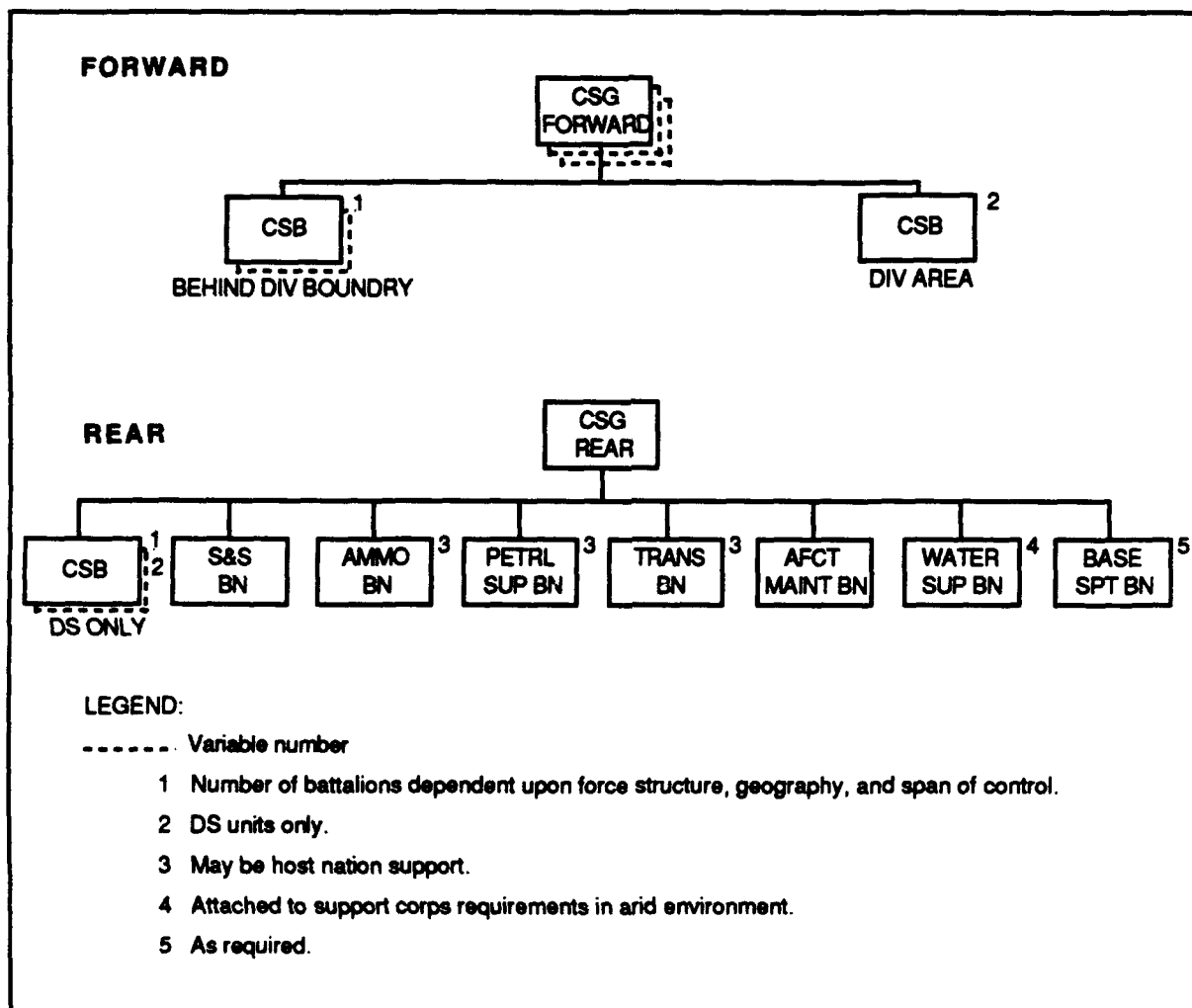


Figure 5. Forward and rear corps support group organizations.

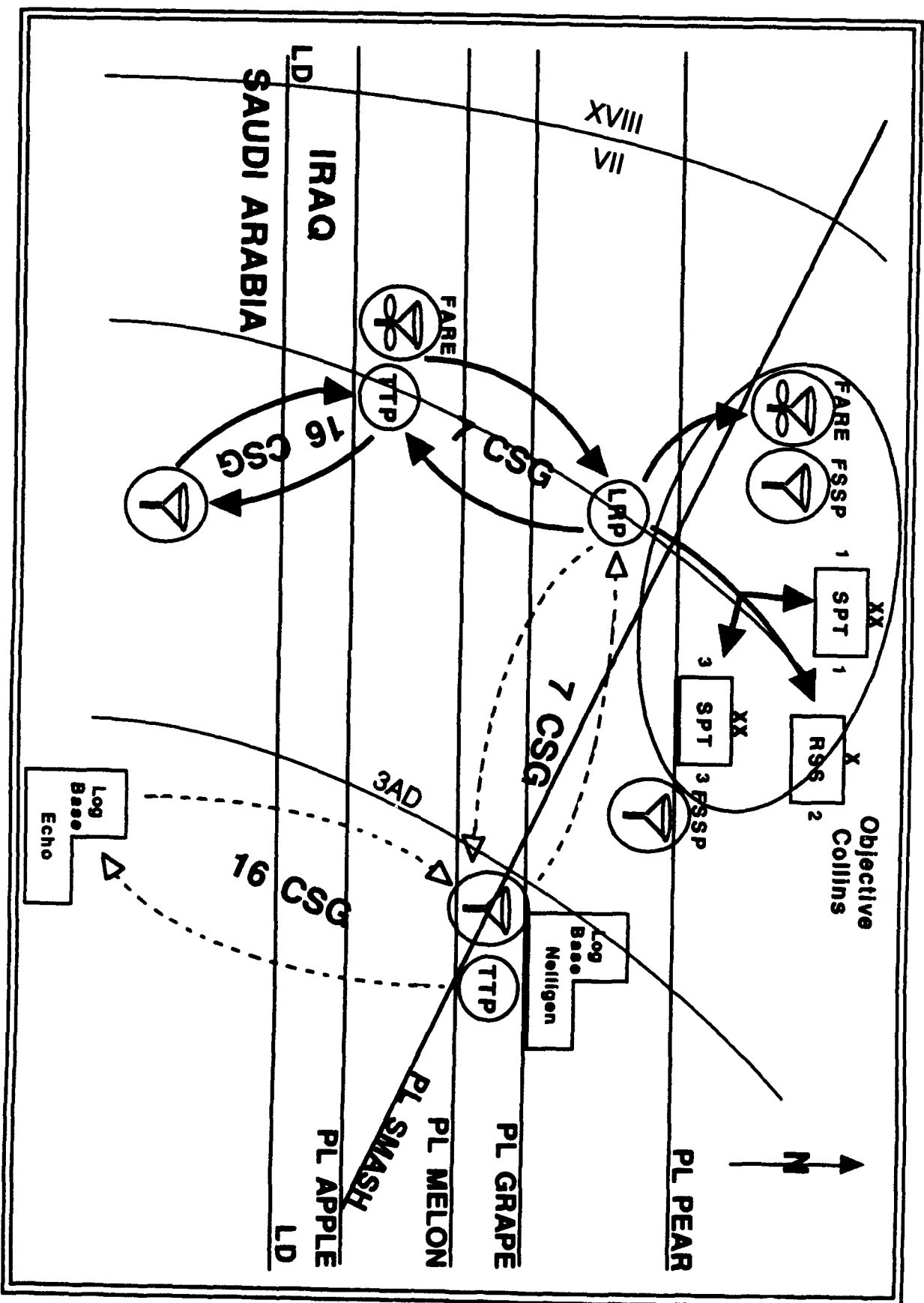


Figure 6. CSS Laydown of Class III.

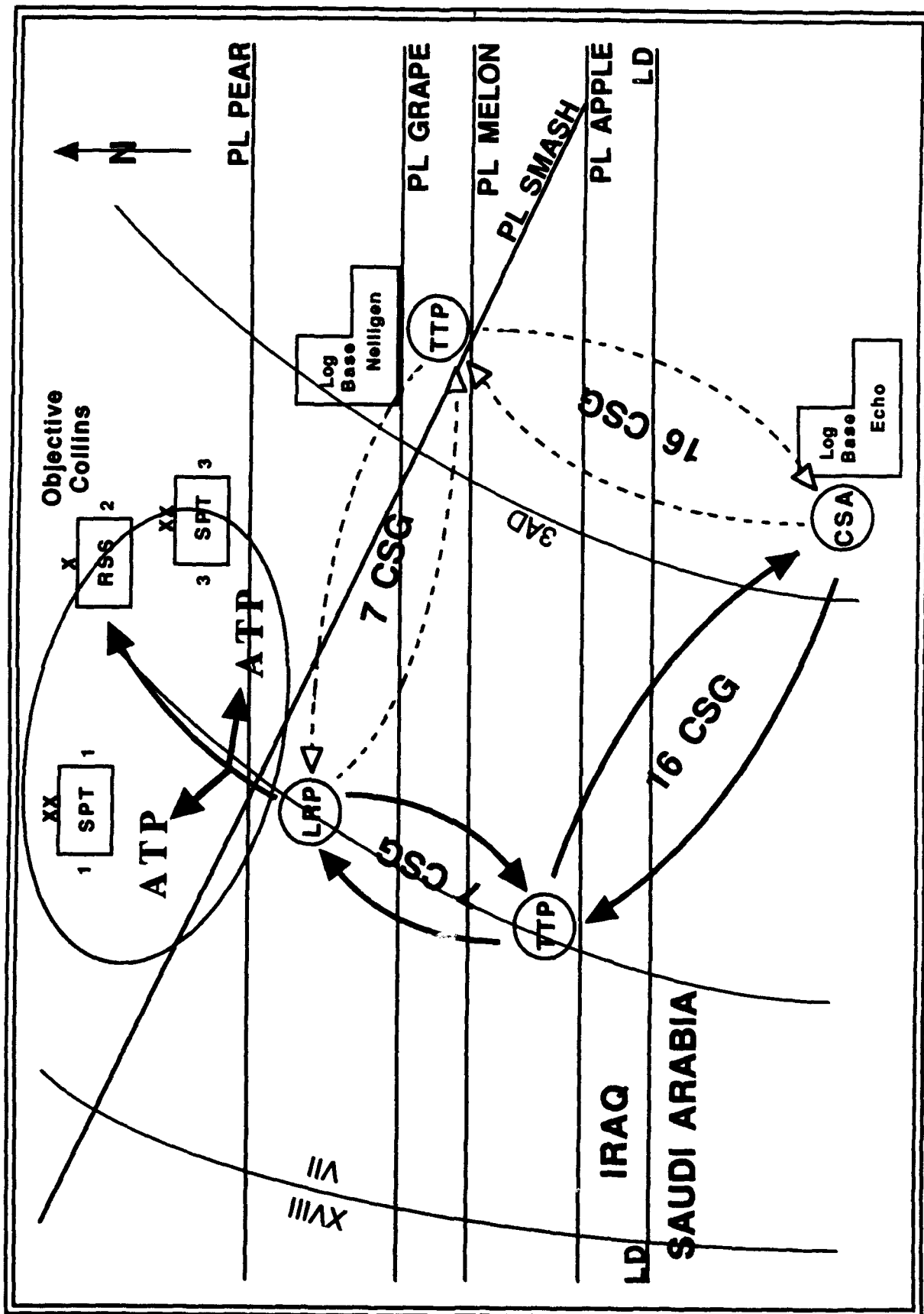


Figure 7. CSS Laydown of Class V.

ENDNOTES

¹Carl E. Vuono, General, "Desert Storm and Future Logistics Challenges," Army Logistician, July-August 1991, p. 28.

²U.S. Army Combined Arms Support Command, Corps Support Group Final Draft, November 1991, p. 1-1.

³U.S. Army Logistics Center, Logistics Command and Control Interim Operational Concept, June 1988, p. 5.

⁴Joseph M. Heiser, Lieutenant General, A Soldier Supporting Soldiers, Appendix A.

⁵U.S. Army Combined Arms Support Command, pp. 1-9.

⁶1st Corps Support Command, After Action Review, 15 October 1991, p. 1-1.

⁷U.S. Army 2d Corps Support Command Briefing. "Operation Desert Storm, 100 Hours War," 1 May 1991, p. 77.

⁸James D. Starling, Lieutenant General, Lecture, "Desert Shield/Storm" (U.S. Army War College), January 1991.

⁹Frederick M. Franks, Jr., General, Lecture, "Approaching the Future" (U.S. Army War College), 3 February 1992.

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